

U.S. Patent Application No. 09/896,886
Amendment dated October 23, 2003
Reply to Office Action dated April 23, 2003

REMARKS

Pending Claims

The Applicants hereby wish to confirm the prior election of Group Ia, claims 1-90. Claims 46, 48, 50, 52, 56, and 74 have been amended in order to more clearly describe Applicant's invention. No new matter has been added. Claim 49 has been cancelled in view of the amendment to claim 46. Claims 1-48 and 50-90 are pending and claims 91-110 have been withdrawn.

Summary of the Invention

The present invention relates to printing plates comprising a substrate and a radiation-absorptive layer, wherein the radiation-absorptive layer comprises at least one modified pigment product. For instance, in one embodiment, the modified pigment product comprises a pigment having attached at least one organic group and at least one amphiphilic counterion. Methods of imaging printing plates are also disclosed.

Restriction Requirement

The Applicants respectfully disagree with the restriction of the claims of the present invention. In particular, as acknowledged by the Examiner in the Office Action dated September 17, 2002, each of the 11 groups fall into class 430 (Radiation Imagery Chemistry: Process, Composition, or Product Thereof). Since each of the claims of these groups require the presence of a modified pigment product having attached at least one organic group, Applicants believe that all of the claims may be searched within class 430 without undue burden on the Examiner.

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However, in order to advance prosecution of this application, Applicants hereby confirm the election of Group Ia, claims 1-90.

Information Disclosure Statement

In paragraph 3 of the Office Action, the Examiner states that the IDS file January 30, 2003 does not comply with 37 CFR 1.98(a)(2) since incomplete copies of WO 99/23174, WO 99/51690, and U.S. Patent No. 5,281,261 were included. The Examiner notes that these citations have been cancelled from Applicants' PTO-1449 form but has included them in the Examiner's PTO-892 form. Applicant's apologize for the submission of the incomplete copies. It is Applicants' understanding that a new PTO-1449 form is not needed since these references have now been included on the Examiner's PTO-892. If this understanding is incorrect, the Applicants respectfully request clarification.

The Applicants further request clarification whether a new PTO-1449 form should be filed in order to specify that the date included for Derwent Abstract No. 82-28019E is the priority date for the reference rather than the publication date, as noted in paragraph 4 of the Office Action.

Objections to the Disclosure

In paragraphs 5-8 of the Office Action, the Examiner has objected to the disclosure of the present application based on various informalities. The Applicants respectfully request the objections be withdrawn based on the following remarks.

Paragraph [0067] has been amended to update the status of the cited U.S. patent application, which has issued as U.S. Patent No. 6,328,894.

Paragraphs [0090], [0093], [0104], and [0105] have been amended to refer to the trademark ARQUAD® as a quaternary ammonium compound.

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Paragraph [0059] has been amended to remove the reference to a prior cited Kirk-Othmer reference.

Paragraph [0007] has been amended to remove reference to DBP 879205.

Regarding the use of the term BET in paragraphs [0027] and [0066], while BET is not defined in the present application, it is a well-known term and would be readily recognized by one skilled in the art (BET is the Brunauer-Emmet-Teller method for measuring pigment surface area using nitrogen absorption). A multitude of technical sources show the common meaning of BET. If the Examiner needs evidence, the Applicants can provide the evidence. Therefore, Applicants do not believe any clarification is needed.

Rejection of Claims under 35 U.S.C. § 112, Second Paragraph

Claims 23-24 and 74-82

The Examiner has rejected the above-identified claims as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicants regard as the invention. The Applicants respectfully disagree.

In paragraph 12 of the Office Action, the Examiner states that the term "modified pigment product" is not clearly defined. The Examiner cites paragraphs [0013] and [0029] of the present application and asks whether the statements of paragraph [0013] limits the modified pigment product of claims 23-24 to modifications of pigments that "attach" at least one organic group or whether the general statement of paragraph [0029] governs what is meant by "modified pigment product" in claims 23-24, which the Examiner states makes it clear that modification is only preferably a pigment having attached at least one organic group. The Examiner adds that claim 25, dependent on claim 23, seems to support the broader interpretation of paragraph [0029]. The Examiner concludes that modification therefore means any modification of a pigment in any manner is encompassed by the "modified pigment product" of claim 23 and gives several examples of modifications.

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The Examiner adds that, based on this, the limits of claims 74-90 also come into question. The Examiner states that claim 74 requires "at least one modified pigment product comprising a pigment that is at least partially coated with one or more polymeric coatings" and asks whether these coatings are required to be organic or are they attached. The Examiner concludes by stating that, for examination purposes, the term is taken to mean any modification of any nature of a pigment since this is the broadest reasonable interpretation.

The Applicants believe that the phrase "modified pigment product" as used in the claims is clear and not indefinite. The Applicants believe that the claims as written are clear to one skilled in the art. The Examiner's reliance on various paragraphs in the present application is acknowledged, but these paragraphs do not make the claims of the present application indefinite. For instance, claim 1 clearly indicates that the modified pigment product is a pigment having attached at least one organic ionic group and at least one amphiphilic counter ion. Thus, this is what the modified pigment product is with respect to claim 1. Furthermore, for instance, with respect to claim 36, the modified pigment product is a pigment having attached at least one organic group of the formula specified in claim 36. Similarly, claim 41 recites that the modified pigment product is a pigment having attached at least one organic group having the specified formula in claim 41. This same understanding of a modified pigment product being a pigment having attached at least one organic group also applies to claim 46, 56, 65, and all of the dependent claims. Claim 23 recites the details of the modified pigment as well. Claim 74 is the only other claim which recites that the modified pigment product is a pigment that is at least partially coated with one or more polymeric coatings. The present specification at paragraph 60 states that this coating is a chemical and/or physical type of coating with respect to the interaction between the coating and the pigment. However, claim 74 does further recite that this polymeric coating is not substantially extractable by an organic solvent. Thus, with respect to each of the independent claims, one skilled in the art would clearly understand what was meant by the term modified pigment product based on the language recited in each claim. Thus, it is believed that each of the claims clearly satisfy the provisions of 35 U.S.C. § 112 and are definite.

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Applicants therefore believe that claims 23-24 and 74-82 are not indefinite and respectfully request that the rejection of these claims be withdrawn.

Claims 49-53

The Examiner has rejected the above-identified claims as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicants regard as the invention. The Applicants respectfully disagree.

In paragraph 14 of the Office Action, the Examiner states that claims 49-53 reference the radiation absorptive layer as further comprising a polymer. The Examiner further states that, since claim 46 already comprises a polymer, i.e., the modified pigment product is or at least is comprised of a polymer by definition, then what is meant by further comprising a polymer is confusing. The Examiner adds that there is no clear antecedent basis for the polymer being further defined by claims 51-53 since it is not clear if two polymers or one is present in the narrowest interpretation of claim 49. The Examiner concludes by stating that, for examination purposes, it is assumed that the Applicants intended the polymer of claim 49 to be a polymer separate from the modified pigment product.

The Applicants believe the phrase "further comprising a polymer" is clear based on the present application. Claim 46, from which claims 49-53 are directly or indirectly dependent, recites that the radiation-absorptive layer comprises at least one modified pigment product having attached at least one organic group represented by the formula $-X\text{-Sp-[Vinyl]}R$. Vinyl represents an acrylic or styrenic homo- or copolymer and is described in more detail in paragraph [0055]. Claim 49, therefore, recites a radiation-absorptive layer which comprises this modified pigment product and further comprises a polymer. These polymers are described in paragraphs [0068]-[0070]. In addition, when specifying types of polymeric materials for the group Vinyl, the phrase "wherein Vinyl is" is used in dependent claims 47 and 48. Likewise, when specifying the types of polymeric materials for the radiation-absorptive layer, the phrase "wherein the polymer" is used in dependent claims 50 and 52. The Applicants believe that a clear distinction has been made between these

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elements. The Applicants therefore agree with the interpretation given by the Examiner that the polymer of claim 49 is separate from the modified pigment product.

The Applicants therefore believe that claims 49-53 are not indefinite and respectfully request that the rejection of these claims be withdrawn.

Claim 48

The Examiner has rejected the above-identified claim as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicants regard as the invention. The Applicants respectfully disagree.

In paragraph 15 of the Office Action, the Examiner states Vinyl is limited in claim 46 to a homo- or copolymer of acrylic monomer units and that neither acrylic ester or methacrylic ester is a homo- or copolymers of acrylic monomer units, thus making the limits of claim 48 unclear. The Examiner concludes that, for examination purposes, it is assumed that the Applicants intended homo- or copolymers of acrylic or methacrylic esters.

Claim 48, as amended, recites that Vinyl is an acrylic or methacrylic ester homo- or copolymer. This is supported by paragraph [0055] of the present application. Thus, it is clear that, as assumed by the Examiner, this was what was intended.

Applicants therefore believe that claim 48 is not indefinite and respectfully request that the rejection of this claim be withdrawn.

Claims 56-64

The Examiner has rejected the above-identified claims as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicants regard as the invention. The Applicants respectfully disagree.

In paragraph 16 of the Office Action, the Examiner states that the claims do not define what is encompassed by "alkyleneimine-based polymer or copolymer" (please note correction). The Examiner further states that the addition of "based" to a definite term such as alkyleneimine (please note correction) without definition of the "based" term leaves unclear what the addition of "based"

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was intended to convey. The Examiner adds that this is further compounded by claiming derivatives of polyethyleneimine in claim 57 and that anything derived from polyethyleneimine is included in claim 57 as long as it falls within the limits of the alkyleneimine-based polymer or copolymer of claim 56.

Claim 56, as amended, discloses that the radiation-absorptive layer comprises a pigment having attached at least one organic group represented by the formula -X-Sp-[EI]R. EI represents an alkyleneimine polymer or copolymer. This would be recognized by one skilled in the art as referring to polymers or copolymers which contain an alkyleneimine unit. Examples of such materials are described in paragraph [0056] of the present application. Thus, as shown in this paragraph, a subset of alkyleneimine polymers and copolymers are polyethyleneimine and derivatives of polyethyleneimine. Examples of these derivatives are also described in paragraph [0056]. The Applicants therefore believe that the distinction between these elements is clear. Furthermore, claims 58-64, which depend directly or indirectly from claim 56, recite further embodiments concerning the radiation-absorptive layer and the substrate and are therefore also clearly defined with respect to the group EI.

The Applicants therefore believe that claims 56-64 are not indefinite and respectfully request that the rejection of these claims be withdrawn.

Claims 58-64

The Examiner has rejected the above-identified claims as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicants regard as the invention. The Applicants respectfully disagree.

In paragraph 17 of the Office Action, the Examiner states that claims 58-64 reference the radiation absorptive layer as further comprising a polymer. The Examiner further states that, since claim 56 already comprised a polymer, i.e., the modified pigment product is or at least is comprised of a polymer (EI is the polymer referenced in claim 56) by definition then what is meant by further comprising a polymer is confusing. The Examiner adds that there is no clear antecedent basis for

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the polymer being further defined by claims 59-62 since it is not clear if two polymers or one is present in the narrowest interpretation of claim 58. The Examiner concludes by stating that, for examination purposes, it is assumed that the Applicants intended the polymer of claim 56 to be a polymer separate from the modified pigment product.

The Applicants believe the phrase "further comprising a polymer" is clear based on the present application. As amended, claim 56, from which claims 58-62 are directly or indirectly dependent, recites that the radiation-absorptive layer comprises at least one modified pigment product having attached at least one organic group represented by the formula $-X-Sp-[EI]R$. EI represents an alkyleneimine polymer or copolymer and is described in more detail in paragraph [0056]. Claim 58, therefore, recites a radiation-absorptive layer which comprises this modified pigment product and further comprises a polymer. These polymers are described in paragraphs [0068]-[0070]. In addition, when specifying types of polymeric materials for the group EI, the phrase "wherein EI is" is used in dependent claim 57. Likewise, when specifying the types of polymeric materials for the radiation-absorptive layer, the phrase "wherein the polymer" is used in dependent claims 59 and 61. The Applicants believe that a clear distinction has been made between these elements. The Applicants therefore agree with the interpretation given by the Examiner that the polymer of claim 58 is separate from the modified pigment product.

The Examiner has given no indication in paragraph 17 for the reason claims 63-64 have been rejected. However, the Applicants point out that claims 63-64, which depend directly from claim 56, recite further embodiments concerning the substrate and are therefore also clearly defined with respect to the polymer of the radiation-absorptive layer.

The Applicants therefore believe that claims 58-64 are not indefinite and respectfully request that the rejection of these claims be withdrawn.

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Claims 67-71

The Examiner has rejected the above-identified claims as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicants regard as the invention. The Applicants respectfully disagree.

In paragraph 18 of the Office Action, the Examiner states that claims 67-71 reference the radiation absorptive layer as further comprising a polymer. The Examiner further states that, since claim 65 already comprises a polymer, i.e., the modified pigment product is or at least is comprised of a polymer (SMA is the polymer referenced in claim 65) by definition then what is meant by further comprising a polymer is confusing. The Examiner adds that there is no clear antecedent basis for the polymer being further defined by claims 68-71 since it is not clear if two polymers or one is present in the narrowest interpretation of claim 58 (Note: The Applicants have assumed the Examiner intended to refer to claim 65. If this is incorrect, clarification is requested.). The Examiner concludes by stating that, for examination purposes, it is assumed that the Applicants intended the polymer of claim 67 to be a polymer separate from the modified pigment product.

The Applicants believe the phrase "further comprising a polymer" is clear based on the present application. Claim 65, from which claims 67-71 are directly or indirectly dependent, recites that the radiation-absorptive layer comprises at least one modified pigment product having attached at least one organic group represented by the formula $-X\text{-Sp-[SMA]R}$. SMA represents a styrene-maleic anhydride polymer or derivative and is described in more detail in paragraph [0057]. Claim 67, therefore, recites a radiation-absorptive layer which comprises this modified pigment product and further comprises a polymer. These polymers are described in paragraphs [0068]-[0070]. In addition, when specifying types of polymeric materials for the group SMA, the phrase "wherein SMA is" is used in dependent claim 66. Likewise, when specifying the types of polymeric materials for the radiation-absorptive layer, the phrase "wherein the polymer" is used in dependent claim 70. The Applicants believe that a clear distinction has been made between these elements. The Applicants therefore agree with the interpretation given by the Examiner that the polymer of claim 67 is separate from the modified pigment product.

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The Applicants therefore believe that claims 67-71 are not indefinite and respectfully request that the rejection of these claims be withdrawn.

Rejection of Claims under 35 U.S.C. § 103(a)

Claims 41-49 and 52-55:

Johnson et al. (WO 99/51690) as evidenced by Grabley et al. (WO 98/31550)

The Examiner has rejected the above-identified claims as being unpatentable over Johnson et al. (WO 99/51690) as evidenced by Grabley et al. (WO 98/31550). The Applicants respectfully disagree.

In paragraph 19 of the Office Action, the Examiner states that Johnson et al. (Example 15, pages 27-28 and Example 2, page 19 in the making of 2E) makes a printing plate that has all but the acrylate resins of claims 41-45. The Examiner further states that Johnson et al. (pages 13-14) teaches using a broader group of materials for their printing plates. The Examiner also states that Grabley et al., which is fully incorporated by reference in Johnson et al., teaches using a pigment mixed with a polyacrylate resin in the radiation-absorptive layer in Example 6 and lists other acrylate ester and methacrylic acid resins as binders for the radiation absorbing pigment layers on page 5. The Examiner concludes that, since Grabley et al. is completely incorporated by Johnson et al., then the plates of Grabley et al. wherein the modified pigments of Johnson et al. are used instead of those disclosed by Grabley et al. make *prima facie* obvious Applicants' printing plates of claims 41-45 because Johnson et al. teaches their use together. The Examiner also adds that, wherein the pigments of Johnson et al. from page 5, line 25 to page 6, line 34, and polymeric groups of polystyrene, styrene copolymers, and acrylic polymers are used to modify the pigments, the printing plates of Johnson et al. make *prima facia* obvious Applicants' plates of claims 46-49 and 52-55.

Regarding claims 41-45, claim 41 recites a printing plate comprising a substrate and a radiation-absorptive layer. The radiation-absorptive layer comprises an acrylic polymer and at least one modified pigment product comprising a pigment having attached at least one organic

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group represented by the formula -X-Sp-[A]_pR. A represents an alkylene oxide group of from about 1 to about 12 carbons. Thus, claim 41 recites the specific combination of an acrylic polymer and a specific modified pigment product.

Johnson et al. discloses, in one embodiment, a printing plate having a radiation-absorptive layer comprising a modified pigment. In particular, Example 15 teaches the preparation of a printing plate using the modified pigment of Example 2E, which is prepared by the attachment of a polyethylene glycol-based surfactant on carbon black. However, as noted by the Examiner, the printing plate that is taught in this example does not include an acrylic polymer. While Johnson et al. (page 14, lines 5-7) teaches that the modified pigments can be used along with other conventional ingredients, such as resins and binders, this is a generic teaching of types of components that are used in printing plates. There is no teaching or suggestion that an acrylic polymer resin or binder should be used in combination with a modified pigment such as shown in Example 2E.

Grabley et al. is incorporated by reference in Johnson et al. (page 14, lines 12-15) for describing details of "conventional components and techniques" that can be used in printing plates. Grabley et al. teaches a recording material which includes at least one IR-absorbing layer comprising at least one IR-absorbing material and at least one polymeric, organic binder. On pages 4-5 of Grabley et al., a variety of components for the IR-absorbing layer are disclosed, including pigments, dyes, and binders. However, there is no teaching in Grabley et al. of modified pigment products nor of specific combination of a modified pigment product and polymeric resins, in particular, an acrylic polymer resin.

It would appear that the Examiner is picking and choosing the one specific polymer in Grabley et al. to use in Johnson et al. This apparently can only be done with the use of hindsight. While Grabley et al. is incorporated in its entirety in Johnson et al., the Examiner is still making a random picking and choosing of the polymers of Grabley et al. and applying them to the printing plate of Johnson et al. This random picking and choosing can only be achieved with the use of

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hindsight. Thus, the Applicants believe that the § 103 rejection is improper and should be withdrawn.

The Applicants therefore believe that claim 41 is patentable over Johnson et al. as evidenced by Grabley et al. Claims 42-45, which depend from claim 41, recite further embodiments of the present invention and, for at least the reasons discussed above, should also be patentable over Johnson et al. as evidenced by Grabley et al.

Regarding claims 46-49 and 52-55, claim 49 has been cancelled by the present amendment, making the rejection of this claim moot. Claim 46, as amended, recites a printing plate comprising a substrate and a radiation-absorptive layer. The radiation-absorptive layer comprises a polymer and at least one modified pigment product comprising a pigment having attached at least one organic group represented by the formula -X-Sp-[Vinyl]_pR. Vinyl represents an acrylic or styrenic homo- or copolymer comprising repeating substituted or unsubstituted acrylic or styrene monomer units. The polymer is an acrylic polymer or a phenolic polymer. Thus, claim 46 recites a specific combination of polymer and a specific modified pigment product.

It would appear that the Examiner is picking and choosing specific polymers of Grabley et al. to use in Johnson et al. This apparently can only be done with the use of hindsight. While Grabley et al. is incorporated in its entirety in Johnson et al., the Examiner is still making a random picking and choosing of the polymers of Grabley et al. and applying them to the printing plate of Johnson et al. This random picking and choosing can only be achieved with the use of hindsight. Thus, the Applicants believe that the § 103 rejection is improper and should be withdrawn.

The Applicants therefore believe that claim 46 is patentable over Johnson et al. as evidenced by Grabley et al. Claims 47-49 and 52-55, which depend either directly or indirectly from claim 46, recite further embodiments of the present invention and, for at least the reasons discussed above, should also be patentable over Johnson et al. as evidenced by Grabley et al.

Therefore, the Applicants believe that claims 41-49 and 52-55 are patentable over Johnson et al. as evidenced by Grabley et al., and respectfully request that this rejection be withdrawn.

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Claims 41-49 and 52-55:

Johnson et al. (U.S. Patent No. 6,336,965 B1) as evidenced by Grabley et al (WO 98/31550)

The Examiner has rejected the above-identified claims as being unpatentable over Johnson et al. (U.S. Patent No. 6,336,965 B1) as evidenced by Grabley et al (WO 98/31550). The Applicants respectfully disagree.

In paragraph 20 of the Office Action, the Examiner states that Johnson et al. (Example 15, pages 27-28 and Example 2, page 19 in the making of 2E) makes a printing plate that has all but the acrylate resins of claims 41-45. The Examiner further states that Johnson et al. (paragraph bridging col. 11-12) teaches using a broader group of materials for their printing plates. The Examiner also states that Grabley et al., which is fully incorporated by reference in Johnson et al., teaches using a pigment mixed with a polyacrylate resin in the radiation-absorptive layer in Example 6 and lists other acrylate ester and methacrylic acid resins as binders for the radiation absorbing pigment layers on page 5. The Examiner concludes that, since Grabley et al. is completely incorporated by Johnson et al., then the plates of Grabley et al. wherein the modified pigments of Johnson et al. are used instead of those disclosed by Grabley et al. make *prima facie* obvious Applicants' printing plates of claims 41-45 because Johnson et al. teaches their use together. The Examiner also adds that, wherein the pigments of Johnson et al. from col 4, line 66 to col. 6, line 4, and polymeric groups of polystyrene, styrene copolymers, and acrylic polymers are used to modify the pigments, the printing plates of Johnson et al. make *prima facia* obvious Applicants' plates of claims 46-49 and 52-55.

The Applicants wish to point out that Johnson et al. (U.S. Patent No. 6,336,965 B1) is a U.S. counterpart of Johnson et al. (WO 99/51690). Therefore, all of the reasons discussed above relating to WO 99/51690 apply equally here. Thus, the Applicants believe that claims 41-49 and 52-55 are patentable over Johnson et al. (U.S. Patent No. 6,336,965 B1) as evidenced by Grabley et al., and respectfully request that this rejection be withdrawn.

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Claims 23-55:

Johnson et al. (WO 99/51690) as evidenced by Van Damme et al (EP 0 803 772 A2)

The Examiner has rejected the above-identified claims as being unpatentable over Johnson et al. (WO 99/51690) as evidenced by Van Damme et al (EP 0 803 772 A2). The Applicants respectfully disagree.

In paragraph 21 of the Office Action, the Examiner states that Johnson et al., in the SUMMARY OF THE INVENTION, discloses that modified pigment products are provided which are capable of improving the dispersibility and dispersion stability of the pigment in compositions and formulations including those used to manufacture lithographic printing plates such as infrared or near-infrared laser imageable printing plates, and carbon blacks are among those adapted by Johnson et al. The Examiner further states that Van Damme et al., which is cited by Johnson et al. on pages 13-14, teaches the formation of thermosensitive layers wherein phenolic resins are mixed with pigments like carbon black to form laser imageable layers that become soluble or swellable in aqueous medium, including phenol-formaldehyde, polymers, polyvinyl phenols which are polyvinyl hydroxystyrene, and polyacrylic acids. The Examiner concludes that, with respect to claims 23-55, the use of the modified carbon black pigments of Johnson et al. in the plates of Van Damme et al. would have been obvious to obtain a more stable dispersion of pigment.

The Applicants would like to point out that Van Damme et al. (EP 0 803 772 A2) has not been incorporated by reference in Johnson et al. (WO 99/51690). Rather, Van Damme et al. (EP 0 803 771 A1) has been mentioned on pages 13-14 of Johnson et al. For the purposes of this response, the Applicants have assumed that the Examiner had intended to cite Van Damme et al. (EP 0 803 771 A1) instead of Van Damme et al. (EP 0 803 772 A2). However, clarification is requested.

Claim 23 recites a printing plate comprising a substrate and a radiation-absorptive layer. The radiation-absorptive layer comprises a phenolic polymer and at least one modified pigment product. Thus, claim 23 recites the specific combination of phenolic polymer and modified pigment product.

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Johnson et al. discloses, in one embodiment, a printing plate having a radiation-absorptive layer comprising a modified pigment. In particular, Johnson et al. notes that the modified pigment products have improved dispersibility and dispersion stability in compositions and formulations. However, as discussed in more detail above, there is no teaching or suggestion in Johnson et al. that a phenolic resin or binder should be used in combination with a modified pigment. Johnson et al. teaches that improved dispersibility can be expected with modified pigment products.

Van Damme et al. (0 803 771 A1) discloses a printing plate having a radiation-absorptive layer that comprises an infrared pigment dispersed in a binder. A preferred pigment is carbon black and preferred polymeric binders include aqueous swellable or soluble binders such as homo- or copolymers of (meth)acrylic acid and polymers containing phenolic hydroxy groups (including polyvinylphenols). However, there is no teaching in Van Damme et al. that a modified pigment product should be used in combination with any of these polymeric binders. In addition, there is no teaching or suggestion in Van Damme et al. that the dispersibility of the pigment is an issue.

It would appear that the Examiner is picking and choosing specific polymers of Van Damme et al. to use in Johnson et al. This apparently can only be done with the use of hindsight. While one version of Van Damme et al. is incorporated in its entirety in Johnson et al., the Examiner is still making a random picking and choosing of the polymers of Van Damme et al. and applying them to the printing plate of Johnson et al. This random picking and choosing can only be achieved with the use of hindsight. Thus, the Applicants believe that the § 103 rejection is improper and should be withdrawn.

The Applicants therefore believe that claim 23 is patentable over Johnson et al. as evidenced by Van Damme et al. Claims 24-35, which depend either directly or indirectly from claim 23, recite further embodiments of the present invention and, for at least the reasons discussed above, should also be patentable over Johnson et al. as evidenced by Van Damme et al.

Claim 36 recites a printing plate comprising a substrate and a radiation-absorptive layer. The radiation-absorptive layer comprises a phenolic polymer and at least one modified pigment product comprising a pigment having attached at least one organic group represented by the

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formula -X-Sp-[A]_pR. A represents an alkylene oxide group of from about 1 to about 12 carbons. Thus, claim 36 recites a specific combination of phenolic polymer and a specific modified pigment product.

As discussed in more detail above, it would appear that the Examiner is picking and choosing the specific polymers of Van Damme et al. to use in Johnson et al. This apparently can only be done with the use of hindsight. While one version of Van Damme et al. is incorporated in its entirety in Johnson et al., the Examiner is still making a random picking and choosing of the polymers of Van Damme et al. and applying them to the printing plate of Johnson et al. This random picking and choosing can only be achieved with the use of hindsight. Thus, the Applicants believe that the § 103 rejection is improper and should be withdrawn.

The Applicants therefore believe that claims 36 is patentable over Johnson et al. as evidenced by Van Damme et al. Claims 37-40, which depend directly from claim 36, recite further embodiments of the present invention and, for at least the reasons discussed above, should also be patentable over Johnson et al. as evidenced by Van Damme et al.

Claim 41 recites a printing plate comprising a substrate and a radiation-absorptive layer. The radiation-absorptive layer comprises an acrylic polymer and at least one modified pigment product comprising a pigment having attached at least one organic group represented by the formula -X-Sp-[A]_pR. A represents an alkylene oxide group of from about 1 to about 12 carbons. Thus, claim 41 recites a specific combination of acrylic polymer and a specific modified pigment product.

As discussed in more detail above, it would appear that the Examiner is picking and choosing the specific polymers of Van Damme et al. to use in Johnson et al. This apparently can only be done with the use of hindsight. While one version of Van Damme et al. is incorporated in its entirety in Johnson et al., the Examiner is still making a random picking and choosing of the polymers of Van Damme et al. and applying them to the printing plate of Johnson et al. This random picking and choosing can only be achieved with the use of hindsight. Thus, the Applicants believe that the § 103 rejection is improper and should be withdrawn.

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The Applicants therefore believe that claims 41 is patentable over Johnson et al. as evidenced by Van Damme et al. Claims 42-45, which depend directly from claim 36, recite further embodiments of the present invention and, for at least the reasons discussed above, should also be patentable over Johnson et al. as evidenced by Van Damme et al.

Claim 46, as amended, recites a printing plate comprising a substrate and a radiation-absorptive layer. The radiation-absorptive layer comprises a polymer and at least one modified pigment product comprising a pigment having attached at least one organic group represented by the formula -X-Sp-[Vinyl]_nR. Vinyl represents an acrylic or styrenic homo- or copolymer comprising repeating substituted or unsubstituted acrylic or styrene monomer units. The polymer is an acrylic polymer or a phenolic polymer. Thus, claim 46 recites a specific combination of a polymer and a specific modified pigment product.

As discussed in more detail above, it would appear that the Examiner is picking and choosing the various polymers of Van Damme et al. to use in Johnson et al. This apparently can only be done with the use of hindsight. While one version of Van Damme et al. is incorporated in its entirety in Johnson et al., the Examiner is still making a random picking and choosing of the polymers of Van Damme et al. and applying them to the printing plate of Johnson et al. This random picking and choosing can only be achieved with the use of hindsight. Thus, the Applicants believe that the § 103 rejection is improper and should be withdrawn.

The Applicants therefore believe that claims 46 is patentable over Johnson et al. as evidenced by Van Damme et al. Claim 49 as been cancelled by the present amendment, making the rejection of this claim moot. Claims 47-48 and 50-55, which depend either directly or indirectly from claim 46, recite further embodiments of the present invention and, for at least the reasons discussed above, should also be patentable over Johnson et al. as evidenced by Van Damme et al.

Therefore, the Applicants believe that claims 23-55 are patentable over Johnson et al. as evidenced by Van Damme et al., and respectfully request that this rejection be withdrawn.

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Claims 23-55:

Johnson et al. (U.S. Patent No. 6,336,965) as evidenced by Van Damme et al (EP 0 803 772 A2).

The Examiner has rejected the above-identified claims as being unpatentable over Johnson et al. (U.S. Patent No. 6,336,965) as evidenced by Van Damme et al (EP 0 803 772 A2). The Applicants respectfully disagree.

In paragraph 22 of the Office Action, the Examiner states that Johnson et al., in the SUMMARY OF THE INVENTION, discloses that modified pigment products are provided which are capable of improving the dispersibility and dispersion stability of the pigment in compositions and formulations including those used to manufacture lithographic printing plates such as infrared or near-infrared laser imageable printing plates, and carbon blacks are among those adapted by Johnson et al. The Examiner further states that Van Damme et al., which is cited by Johnson et al. in the paragraph bridging columns 11-12, teaches the formation of thermosensitive layers wherein phenolic resins are mixed with pigments like carbon black to form laser imageable layers that become soluble or swellable in aqueous medium, including phenol-formaldehyde, polymers, polyvinyl phenols which are polyvinyl hydroxystyrene, and polyacrylic acids. The Examiner concludes that, with respect to claims 23-55, the use of the modified carbon black pigments of Johnson et al. in the plates of Van Damme et al. would have been obvious to obtain a more stable dispersion of pigment.

The Applicants would like to point out that Van Damme et al. (EP 0 803 772 A2) has not been incorporated by reference in Johnson et al. (WO 99/51690). Rather, Van Damme et al. (EP 0 803 771 A1) has been mentioned in the paragraph bridging columns 11-12 of Johnson et al. For the purposes of this response, Applicants have assumed that the Examiner had intended to cite Van Damme et al. (EP 0 803 771 A1) instead of Van Damme et al. (EP 0 803 772 A2). However, clarification is requested.

The Applicants further wish to point out that Johnson et al. (U.S. Patent No. 6,336,965 B1) is a U.S. counterpart of Johnson et al. (WO 99/51690). Therefore, all of the reasons discussed above relating to WO 99/51690 apply equally here. Thus, the Applicants believe that claims 23-55

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are patentable over Johnson et al. (U.S. Patent No. 6,336,965 B1) as evidenced by Van Damme et al., and respectfully request that this rejection be withdrawn.

Claims 23-35:

Adams et al. (U.S. Patent No. 5,885,335) as evidenced by Van Damme et al (EP 0 803 772 A2)

The Examiner has rejected the above-identified claims as being unpatentable over Adams et al. (U.S. Patent No. 5,885,335) as evidenced by Van Damme et al (EP 0 803 772 A2). The Applicants respectfully disagree.

In paragraph 23 of the Office Action, the Examiner states that Adams et al. teaches modifying carbon materials such as carbon blacks with ionic groups or ionizable groups to modify their dispersibility in polymeric coatings as well as obtain carbon products of improved gloss and flow. Van Damme et al. relates to the formation of thermosensitive layers wherein phenolic resins are mixed with pigments like carbon black to form laser imageable layers that become soluble or swellable in aqueous medium, including phenol-formaldehyde, polymers, polyvinyl phenols which are polyvinyl hydroxystyrene, and polyacrylic acids. The Examiner concludes that, with respect to claims 23-35, the use of the modified carbon black pigments of Adams et al. in the plates of Van Damme et al. would have been obvious to obtain a more stable dispersion of pigment.

Claim 23 recites a printing plate comprising a substrate and a radiation-absorptive layer. The radiation-absorptive layer comprises a phenolic polymer and at least one modified pigment product. Thus, claim 23 teaches the specific combination of phenolic polymer and modified pigment product.

Adams et al. discloses, in one embodiment, a modified carbon product which comprises carbon having attached at least one organic group. The organic group comprises a) at least one aromatic group or a C1-C12 alkyl group, and b) at least one ionic group, at least one ionizable group, or a mixture of an ionic group or an ionizable group. Adams et al. further notes that the modified pigment products have improved dispersibility in polymeric coatings. However, there is no teaching or suggestion in Adams et al. that the modified pigments can be used in a printing plate.

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Furthermore, there is no teaching or suggestion in Adams et al. that the modified pigments can be used in combination with a polymer resin, and, in particular, a phenolic resin.

Van Damme et al. discloses an imaging element for making a lithographic printing plate comprising a support having a photosensitive layer and a thermosensitive layer. The thermosensitive layer comprises an infrared pigment dispersed in a binder. A preferred pigment is carbon black and preferred polymeric binders include aqueous swellable or soluble binders such as homo- or copolymers of (meth)acrylic acid and polymers containing phenolic hydroxy groups (including polyvinylphenols). However, there is no teaching in Van Damme et al. that a modified pigment product should be used in combination with any of these polymeric binders. In addition, there is no teaching or suggestion in Van Damme et al. that the dispersibility of the pigment is an issue.

Thus, Adams et al. discloses modified carbon products and teaches that the modified pigment products have improved dispersibility and dispersion stability but does not teach or suggest the combination of such a modified pigment product with a phenolic resin nor a printing plate comprising this combination. Van Damme et al. does not cure the deficiencies of Adams et al. since there is also no teaching or suggestion in Van Damme et al. that a modified pigment product can be used in combination with any polymers, let alone phenolic polymers. Only conventional combinations of infrared pigments and binders such as phenolic polymers are taught.

Furthermore, one skilled in the art would not look to Van Damme et al. for a teaching of which resin to use with a modified pigment product. Van Damme et al. relates to printing plates, and Adams et al. does not teach or suggest the use of modified pigments in a printing plate. Furthermore, Adams et al. teaches non-aqueous inks and coatings while Van Damme et al. does not. Therefore, the Applicants believe that these references are not combinable and that one skilled in the would not look to Van Damme et al. based on the teaching of Adams et al.

Even if one were to combine these references, the result would not be a printing plate of the present invention. Instead, one skilled in the art would be lead to prepare a non-aqueous ink or

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coating using a modified carbon product and a certain aqueous swellable or soluble resins. Clearly this is not the radiation-absorptive layer of the printing plate of the present invention.

The Applicants therefore believe that claims 23 is patentable over Adams et al. as evidenced by Van Damme et al. Claims 24-35, which depend either directly or indirectly from claim 23, recite further embodiments of the present invention and, for at least the reasons discussed above, should also be patentable over Adams et al. as evidenced by Van Damme et al.

Therefore, the Applicants believe that claims 23-35 are patentable over Adams et al. as evidenced by Van Damme et al., and respectfully request that this rejection be withdrawn.

Claims 1-23 and 83-90:

Van Damme et al (EP 0 803 772 A2) or Grabley et al (WO 98/31550) in view of Adams et al. (U.S. Patent No. 5,698,016)

The Examiner has rejected the above-identified claims as being unpatentable over Van Damme et al (EP 0 803 772 A2) or Grabley et al (WO 98/31550) in view of Adams et al. (U.S. Patent No. 5,698,016). The Applicants respectfully disagree.

In paragraph 24 of the Office Action, the Examiner states that Van Damme et al. and Grabley et al. teach making the instant printing plates with the exception of using the modified pigment set forth. However, Adams et al. teaches using the pigment when carbon black in conventional compositions. The Examiner concludes that, with respect to claims 1-23 and 83-90, the use of the pigments of Adams et al. as the carbon black of Van Damme et al. or Grabley et al. would have been *prima facie* obvious to enhance pigment dispersibility as set forth in Adams et al.

Claim 1 recites a printing plate comprising a substrate and a radiation-absorptive layer. The radiation-absorptive layer comprises at least one modified pigment product comprising a pigment having attached at least one organic ionic group and at least one amphiphilic counterion, wherein said amphiphilic counterion has a charge opposite to that of the organic ionic group.

Van Damme et al. relates to an imaging element for making a lithographic printing plate comprising a support having a photosensitive layer and a thermosensitive layer. The

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thermosensitive layer comprises an infrared pigment dispersed in a binder. A preferred pigment is carbon black and preferred polymeric binders include aqueous swellable or soluble binders such as homo- or copolymers of (meth)acrylic acid and polymers containing phenolic hydroxy groups (including polyvinylphenols). However, there is no teaching in Van Damme et al. that a modified pigment product should be used in combination with any of these polymeric binders. In addition, there is no teaching or suggestion in Van Damme et al. that the dispersibility of the pigment is an issue.

Grabley et al. relates to a recording material which includes at least one IR-absorbing layer comprising at least one IR-absorbing material and at least one polymeric, organic binder. On pages 4-5 of Grabley et al., a variety of components for the IR-absorbing layer are set forth, including pigments, dyes, and binders. However, as in Van Damme et al., there is no teaching in Grabley et al. of modified pigment products nor that the dispersibility of the pigment in the binders is an issue.

Adams et al. does not cure the deficiencies of either Van Damme et al. or Grabley et al. Adams et al. discloses, in one embodiment, a modified carbon product which comprises carbon having attached at least one organic group. The organic group comprises a) at least one aromatic group or a C1-C12 alkyl group, and b) at least one ionic group, at least one ionizable group, or a mixture of an ionic group or an ionizable group. Adams et al. further notes that the modified pigment products have improved dispersibility in polymeric coatings. However, there is no teaching or suggestion in Adams et al. that the modified pigments can be used in a printing plate.

The Applicants believe that one skilled in the art would not look to Adams et al. for a teaching of modified pigment products in forming a printing plate. Van Damme et al. and Grabley et al. relate to printing plates, and Adams et al. does not teach or suggest the use of modified pigments in a printing plate. Furthermore, Adams et al. teaches non-aqueous inks and coatings while Van Damme et al. and Grabley et al. do not. Therefore, the Applicants believe that these references are not combinable and that one skilled in the art would not look to Adams et al. based on the teaching of Van Damme et al. or Grabley et al.

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Even if one were to combine these references, the result would not be a printing plate of the present invention. Instead, one skilled in the art would be lead to prepare a non-aqueous ink or coating using a modified carbon product and a certain aqueous swellable or soluble resins. Clearly this is not the radiation-absorptive layer of the printing plate of the present invention.

The Applicants therefore believe that claim 1 is patentable over Van Damme et al. or Grabley et al. as evidenced by Adams et al. Claims 2-22 and 83-90, which depend either directly or indirectly from claim 21, recite further embodiments of the present invention and, for at least the reasons discussed above, should also be patentable over Van Damme et al. or Grabley et al. as evidenced by Adams et al.

Claim 23 recite a printing plate comprising a substrate and a radiation-absorptive layer. The radiation-absorptive layer comprises a phenolic polymer and at least one modified pigment product. Thus, claim 23 recites the specific combination of phenolic polymer and modified pigment product.

As discussed in more detail above, Van Damme et al. relates to an imaging element for making a lithographic printing plate comprising a support having a photosensitive layer and a thermosensitive layer. The thermosensitive layer comprises an infrared pigment such as carbon black dispersed in a binder such as an aqueous swellable or soluble binder, including homo- or copolymers of (meth)acrylic acid and polymers containing phenolic hydroxy groups (including polyvinylphenols). Grabley et al. relates to a recording material which includes at least one IR-absorbing layer comprising at least one IR-absorbing material, including pigments and dyes and at least one polymeric, organic binder. However, there is no teaching in either reference of the combination of a modified pigment and a phenolic resin. In addition, neither Van Damme et al. nor Grabley et al. teach or suggest modified pigment products nor that the dispersibility of the pigment in the binders is an issue. The Applicants believe that Adams et al., which discloses, in one embodiment, a modified carbon product which comprises a carbon product having attached at least one organic group, cannot be combined with either Van Damme et al. or Grabley et al. since there is no teaching or suggestion in Adams et al. that the modified pigments can be used in a printing

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plate. Adams et al. teaches non-aqueous inks and coatings. Furthermore, even if one were to combine these references, the result would not be a printing plate of the present invention. Instead, one skilled in the art would be lead to prepare a non-aqueous ink or coating using a modified carbon product and a certain aqueous swellable or soluble resins. Clearly this is not the radiation-absorptive layer of the printing plate of the present invention.

The Applicants therefore believe that claim 23 is patentable over Van Damme et al. or Grabley et al. as evidenced by Adams et al.

Therefore, the Applicants believe that claims 1-23 and 83-90 are patentable over Van Damme et al. or Grabley et al. as evidenced by Adams et al., and respectfully request that this rejection be withdrawn.

Rejection of Claims under 35 U.S.C. § 102(b)

Claims 74, 76, 79, and 81-82

The Examiner has rejected the above-identified claims as being anticipated by Sypek et al. (U.S. Patent No. 5,286,594). The Applicants respectfully disagree.

In paragraph 25 of the Office Action, the Examiner refers to specific portions of Sypek et al. including Examples 1, 2, and 9. In Example 1, the Examiner refers to 57-760002 chip as coated with an acrylamide substituted cellulose ester, and mixed in with an acrylamide substituted cellulose ester), Example 2 wherein 79R27C chip is the pigment coated with polyvinylbutyral polymer and is mixed with a cellulose polymer. Referring to Example 2, the Examiner states that 79R27C is the pigment coated with polyvinylbutyral polymer and is mixed with a cellulose polymer. Referring to Example 3, the Examiner states that chip 79R84C is used as encapsulated pigment coated with an acrylated polyurethane, i.e., an acrylic polymer, and polyvinylbutyral polymer encasing perylene maroon pigment. The Examiner further states that the pigment of Sypek et al. is radiation absorptive inherently as evidenced by its being used to produce a color in the lithographic printing plates made. The Examiner concludes that the plates of Sypek et al. anticipate

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the plates of claims 74, 76, 79, and 81-82 since the coated pigments of Sypek et al. are held to be modified pigment products and since the Applicants have made no requirements other than the modification other than the polymer partially or fully coats a pigment.

As amended, claim 74 recites a printing plate comprising a substrate and a radiation-absorptive layer. The radiation-absorptive layer comprises at least one modified pigment product comprising a pigment that is at least partially coated with one or more polymeric coatings, wherein the polymeric coating is not substantially extractable by an organic solvent.

Sypek et al. relates to a printing plate having a photosensitive coating composed of a photopolymerizable combination which includes a photopolymerizable pigment dispersion. The pigment dispersion or composition comprises pigment particles that are substantially pre-encapsulated by a barrier material.

The Examiner has equated the pigment dispersion of Sypek et al. with the modified pigment product of the present invention. However, the Applicants believe that these are not the same. The pigment composition of Sypek et al. is a pigment dispersion. As taught in column 4, line 67 to column 5, line 28 of Sypek et al., the goal is to achieve a dispersion of pigment which does not recombine or reagglomerate – that is, a stable pigment dispersion. In order to achieve this result, the pigment compositions of Sypek et al. utilize a dispersant to keep pigment particles dispersed and to act as a barrier to reagglomeration. The dispersants surround or encapsulate the pigment. The pigment dispersion is then used to form a coating, and Sypek et al. teaches that the dispersant must remain bound to the pigment. Otherwise reagglomeration of the pigment will occur.

Sypek et al. is describing conventional dispersion technology, utilizing, in some embodiments, photopolymerizable dispersants. This is not the modified pigment used in the printing plate of the present invention. As described in paragraph [0060] of the present application, as well as current in claim 74, the polymer is present on the modified pigment such that the polymer is not substantially extractable by an organic solvent. While the dispersants described in Sypek et al. surround the pigment, the Applicants believe that, as with conventional dispersants, these can be substantially removed by extraction. Thus, one skilled in the art would not equate the dispersant

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used to prepare the pigment dispersion of Sypek et al. with the polymer coated pigment used in the present application, which cannot be substantially extracted.

The Examples cited by the Examiner further support this difference. In Example 1, the 57-760002 chip is a perylene maroon pigment dispersion which uses an acrylamido substituted cellulose ester as the photopolymerizable dispersant. In Example 2, 79R27C chip is a pigment dispersion of perylene maroon pigment using a non-photopolymerizable polyvinylbutyral dispersant. In Example 9, the pigment dispersion contains an acrylated polyurethane oligomer as a photopolymerizable dispersant for the perylene maroon pigment (which Applicants believe is not an acrylic polymer as stated by the Examiner but rather is a polyurethane which has acrylate groups and is therefore photopolymerizable).

The Applicants therefore believe that Sypek et al. does not disclose the printing plate of claim 74 and therefore Sypek et al. does not anticipate this claim. Claims 76, 79, and 81-82, which depend either directly or indirectly from claim 74, recite further embodiments of the present invention and, for at least the reasons discussed above, are also not anticipated by Sypek et al.

Therefore, the Applicants believe that claims 74, 76, 79, and 81-82 are not anticipated by Sypek et al. and respectfully request that this rejection be withdrawn.

Allowable Subject Matter

The Applicants wish to thank the Examiner for the allowance of claims 65-66 and 72-73, as stated in paragraph 26 of the Office Action. Applicants further believe that, as described in more detail above, claims 1-64, 67-71, and 74-90 should also be allowable.

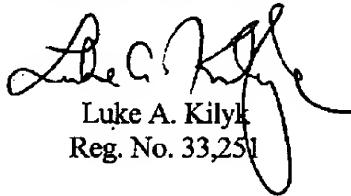
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Conclusion

In view of the foregoing remarks, the Applicants believe that this application is considered to be in good and proper form for allowance, and the Examiner is respectfully requested to pass this application to issue. If, in the opinion of the Examiner, a telephone conference would further expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney.

If there are any other fees due in connection with the filing of this response, please charge the fees to Deposit Account No. 03-0060. If a fee is required for an extension of time under 37 C.F.R. § 1.136 not accounted for above, such extension is requested and should also be charged to said Deposit Account.

Respectfully submitted,


Luke A. Kilyk
Reg. No. 33,251

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Atty. Docket No. 00066CON (3600-448)
KILYK & BOWERSOX, P.L.L.C.
53 A East Lee Street
Warrenton, VA 20186
Tel.: (540) 428-1701
Fax: (540) 428-1720